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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/577,032	05/23/2000	Kunihiro Tashiro	1324.64102	3410
7590 10/03/2003			EXAMINER	
Patrick G. Burns, Esq. Greer, Burns & Crain, Ltd. 300 S. Wacker Drive Suite 2500 Chicago, IL 60606			DUONG, THOI V	
			ART UNIT	PAPER NUMBER
			2871	
DATE MAILED: 10/03/2003				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/577,032

Applicant(s)

TASHIRO ET AL.

Examiner

Thoi V Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-9 and 17-20 ~~is/are~~ pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20 ~~is/are~~ allowed.
- 6) ☒ Claim(s) 1,2,4-9 and 17-19 ~~is/are~~ rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 16 June 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. This office action is in response to the Amendment, Paper No. 13, filed June 16, 2003.

Accordingly, claims 9 and 19 were amended. Currently, claims 1, 2, 4-9 and 17-20 are pending in this application.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 2, 4-8 and 17-19 have been considered but are moot in view of the new ground(s) of rejection. Claim 9 stands rejected since the light-reflection layer having a concave-convex structure is formed under the sealing material as shown in Fig. 8B of USPN 6,259,500 B1.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 06-194615 (JP'615).

As shown in Figs. 1 and 2, JP'615 discloses a liquid crystal display (LCD) comprising:

two substrates 1 and 2 attached opposing each other;

a sealing material 10 formed outside a display area having a plurality of pixels for sealing liquid crystal between two substrates; and

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a plurality of structures 9a formed inside the display area for controlling spreading of liquid crystal LC,

wherein the plurality of the structures are distributed on the substrate at a predetermined arrangement density or a predetermined arrangement shape.

5. Claim 19 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 2001-209060 (JP'060).

As shown in Figs. 9 and 10, JP'060 discloses a liquid crystal display comprising:
two substrates 30 and 31 attached opposing each other;
a sealing material 46 formed outside a display area having a plurality of pixels for sealing liquid crystal 47 between the two substrates; and
a convex shape structure 40-42 provided in a frame shape between the sealing material and the display area, on the substrates (see Abstract).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada et al. (USPN 5,910,829) in view of Shuichi (JP 11-015007).

As shown in Figs. 15 and 16, Shimada et al. discloses a liquid crystal display (LCD) comprising:

a sealing material 133 sandwiched between two substrates 111 and 130; and

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a blue-colored layer B formed at an area of a shading film 134a, wherein the blue-colored layer B contacts the sealing material; and wherein the shading film comprises a shading area overlaying the blue-colored layer B transmitting blue light with a red-colored layer R to transmit color light and a green-colored layer G to transmit green light (see Fig. 16), wherein the red-colored layer, the green-colored layer and the blue-colored layer are respectively made of the same material as a forming material of color filters 131 of red, green and blue formed corresponding to each pixel.

Shimada et al. discloses a LCD that is basically the same as that recited in claims 1 and 2 except for a sealing material made of a photo-curing type material irradiated with a wavelength of blue color band. Shuichi discloses a LCD comprising a photo-curing type sealing material which is irradiated with light having 380 nm wavelength or longer (see Abstract). Accordingly, the sealing material is activated with a wavelength in the range of a blue color band (approximately 380-550 nm). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD of Shimada et al. with the teaching of Shuichi by employing a photo-curing type sealing material irradiated with a wavelength of blue color band so as to prevent curing defects and to obtain an inexpensive and reliable display.

8. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takuya (JP 11-119230) in view of JP 2001-209060 (JP'060).

As shown in Fig. 6, Takuya discloses a liquid crystal display comprising:

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two substrates 21 and 22 sandwiching liquid crystal 29 and opposing to each other;

a main seal 61 attaching the two substrates at an external peripheral portion of a display area of the substrates;

a black matrix picture-frame 62 arranged on an upper substrate 22 such that its end part contacts the main seal and is not formed on the seal formation area;

a perpendicular alignment film 30 on a lower substrate 21 (see Fig. 1); and
gap holding pillars 43a and 43b.

Takura discloses a liquid crystal display that is basically the same as that recited in claims 5 and 6 except for a frame-shape structure formed in the area between the main seal and the display area. As shown in Fig. 11, JP'060 discloses a liquid crystal display comprising a frame-shape structure 48 or 49 formed next to the main seal and in the area between the main seal and the display area to prevent contamination of liquid crystal 47 (see Abstract), wherein the frame-shape structure 48 or 49 has a height half of that of a spacer (not shown) in the display area. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Takura with the teaching of JP'510 by forming a frame-shape structure (instead of gap holding pillar 43a) in the area between the main seal and the display area so as to prevent contamination of liquid crystal as well as to hold the gap of the display at the periphery of display areas.

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9. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takuya (JP 11-119230) in view of JP 2001-209060 (JP'060) as applied to claims 5 and 6 above and further in view of Sakai et al. (USPN 6,222,603 B1).

The liquid crystal display of Takuya as modified in view of JP'060 above includes all that is recited in claims 7 and 8 except for a second frame-shape structure formed in an external area of the main seal. As shown in Fig.6, Sakai discloses a liquid crystal comprising a main seal 6 and a frame-shape structure 11 for forming a more uniform gap of an LC cell shown in Fig. 1 (col. 5, lines 26-35). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the LCD of Takura with the teaching of Sakai et al. by forming a second frame-shape structure (instead of gap holding pillar 43b) in an external area from the main seal on the black matrix picture-frame for improving the uniformity of a display cell gap.

10. Claim 9 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kijima et al. (USPN 6,259,500 B1) in view of Shuichi (JP11-015007).

As shown in Fig. 8B, Kijima discloses a LCD comprising a sealing material 36 sandwiched between two substrates 11 comprising a light-reflection layer 19 having a concave-convex structure which has inclined surfaces and formed in an area to be under the sealing material on the first substrate 11 (col. 4, lines 7-10). Kijima discloses a LCD that is basically the same as that recited in claim 9 except for a photo-curing type sealing material. Shuichi discloses a LCD comprising a sealing material irradiated with light having 380 nm wavelength or longer for bonding panel substrates (see Abstract).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD of Kijima et al. with the teaching of Schuichi by employing a photo-curing type sealing material to seal the display with an inexpensive method.

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (Fig. 9) in view of JP 03-36525 (JP'525) and Hasegawa et al. (JP 09-090383).

As shown in Fig. 9, Applicant's Prior Art discloses a conventional transfer 231 formed in a BM picture-frame portion 108 adjacent to the sealing material 6 and electrically connected to both of substrates via a transfer pad 232 (Specification page 44, lines 22-30). Applicant's Prior Art discloses a conventional transfer that is basically the same as that recited in claim 4 except for a transfer having colored particles and a light incident hole opened at the shading film above the transfer. As shown in Fig. 2, JP'525 discloses a liquid crystal display comprising a transfer 4 formed by incorporating a black dye into silver paste to obviate the degradation of the display in the sealing region (see Abstract). Meanwhile, as shown in Figs. 5 and 8, Hasegawa et al. discloses a liquid crystal display comprising a light transmitting part (hole filled with transparent material) 53 formed at the shading film 43b in the application of a UV-curing sealing material 57 to surely harden the sealing material in a short time and (see Abstract). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Applicant's Prior Art with the teachings of JP'525 and Hasegawa et al. by forming a transfer having colored particles and a light incident hole

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opened at the shading film above the transfer so as to obviate the degradation of the display in the sealing region and to surely harden the UV-curing sealing material and prevent liquid crystal from being polluted by non-hardened sealing material.

Allowable Subject Matter

12. Claim 20 is allowed.

The following is an examiner's statement of reasons for allowance: none of the prior art of record fairly suggests or shows all of the limitations as claimed. Specifically,

Re claim 20, none of the prior art of record discloses, in combination with other limitations as claimed, a hollow frame-shape sealing material formed at an external periphery of the sealing material.

The most relevant references, USPN 4,640,583 of Hoshikawa et al. and USPN 6,222,603 B1 of Sakai et al., fails to disclose or suggest such hollow frame-shape sealing material. The Hoshikawa et al.'s reference discloses three sealant material formed close to each other without spacing as shown in Fig. 9A. Meanwhile, the Sakai et al.'s reference only discloses a hollow frame-shape sealing material as shown in Fig. 6.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (703) 308-3171. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (703) 305-3492.

Thoi Duong

09/21/2003


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